

## **Acute toxicity and metabolomics analysis of hypocholesterolemic effect of *Mentha piperita* aqueous extract in Wistar rats**

### **ABSTRACT**

The oral acute toxicity of the aqueous peppermint extract (APE) was assessed and the bio and/or chemo markers for hypocholesterolemic activity of APE were identified through metabolomics approach. No mortality resulted from the present oral acute toxicity study in which the histological changes observed in the selected organs and the biochemical deviation of blood compared to the normal range level were minimal. This study also explored the effect of 290 mg-1 kg body weight of APE against 5% cholesterol-enriched diet within 14 days treatment. Whereby after the treatment, there were reductions exhibited in plasma total cholesterol (44.32%), LDL-cholesterol (69.19%) and total triglycerides (55.77%). <sup>1</sup>H NMR-metabolomics approach was, employed for better sensitivity and accuracy in evaluating the potential plasma biomarkers of hyper-and hypo-cholesterolemic properties.  $\beta$ -Hydroxybutarate and  $\alpha$ -D-glucose have been identified as the possible hypercholesterolemic markers, whereas taurine, betaine, alanine, glycine and L-leucine were suggested to be the hypocholesterolemic markers of APE.

**Keyword:** *Mentha piperita*; Peppermint; Hypercholesterolemia; Metabolomics; <sup>1</sup>H NMR; Multivariate data analysis